

Notes from the Workshop on:

Community-level Grain Storage Projects (Cereal Banks) Why do they Rarely Work and What are the Alternatives?

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Introduction

These notes summarize the main points presented and discussed at the workshop. They are written to remind the participants of the topics we covered and to share information with others who were not able to attend. These notes are based on the presentation outlines of Lawrence Kent and are intended to complement the more extensive written materials distributed at the workshop. A list of these materials is included in Annex A.

Day 1: Introductions, Objectives, and Techniques for Analyzing Grain Markets

Participation

Thirty-four participants attended, from 16 different CRS country programs and CRS headquarters in Baltimore. Also attending were representatives of the Food and Agricultural Organization, the International Labor Organization, World Vision, Plan International and Technoserve. Lawrence Kent served as the lead presenter and facilitator, with support from Kevin Tobin, Jindra Cekan, Elliot Berg and others. The list of participants with their addresses is attached (Annex B).

Workshop Objectives

The workshop was designed with four principal objectives in mind:

1. To increase understanding of why cereal bank projects rarely work and to reconsider under what circumstances these projects should be promoted in the future;
2. To improve participants' skills in the assessment of rural agricultural markets to help them in the design and evaluation of future projects;
3. To explore alternative approaches to improving food security at the community level through marketing, credit and production projects;
4. To facilitate direct exchanges between people involved in cereal banks and food security projects, allowing for the sharing of lessons learned.

Definition of Cereal Banks (CBs) -- Lawrence Kent

There are a lot of variations, but most commonly: “cereal banks are village cooperatives that buy, store and sell basic foodgrains.”

The basic cereal bank model is as follows. A sponsoring agency - usually an NGO - helps finance the construction of a small warehouse to be used for grain storage. Typically the outside sponsor provides construction materials while the villagers provide unskilled labor. The sponsoring agency also gives a grant or loan to start operations. The cereal bank's management committee uses the money to purchase millet or sorghum at the time of the year when prices tend to be lowest (October-December in the Sahel) and then stores the grain in sacks in the village warehouse. During the “hungry season” (June-August), when cereals become scarce and prices tend to be at their highest, the cereal bank sells its grain stock in the village. The price is usually set at a level above the price at which grain was originally purchased but below the current free market price. Revenues are used as a revolving fund to refinance the operation the following year.

Some CBs are situated in roughly self-sufficient agricultural zones - they tend to buy cereals locally, store them locally and sell them locally. Some CBs are situated in villages that suffer from chronic cereals deficits - they tend to try to purchase cereals outside the village then bring them back to sell locally. Some CBs are located in villages that produce significant cereal surpluses - they usually purchase grain in their own village, store it and try to sell it later to outsiders.

Many variations exist on this basic model. Some CBs are more active traders, buying and selling throughout the year. In Chad, the initial credit to the CB has been mainly seasonal, with loan repayment required after each year's harvest. In Niger, many CBs operate on an in-kind basis - the CBs lend their cereals out to their members in-kind during the hungry season. The members are then supposed to repay these loans in-kind after the harvest.

CBs are particularly popular in the Sahel. The droughts of the early 1980s brought a lot of NGOs and a lot of food aid to the region, and the concept of CBs appealed to them as well as governments and villagers. Frequently CBs were seen as a way to increase food aid impact. When we (Lawrence Kent & Dr. Elliot Berg) did our census in 1991, we learned that 3,300 cereal banks had been established in the Sahel, about half of them in Burkina Faso. The others were in Senegal, Niger, Mali, Chad and Mauritania. Since that time many more have been created, perhaps another 20 percent, bringing the total to over 4,000 CBs.

However, not all of these 4,000 CBs are still operational. Approximately 3,000 are effectively out of business, while maybe 1,000 continue to buy and sell grain. We'll talk more about this later.

More recently we've learned of cereal banks being created in Ghana and Benin and variations of the classic cereal bank model being established in Madagascar, Haiti, and other places. A review of CRS files shows that the agency has helped establish and support classic cereal banks in Niger, Senegal, Ghana, and Benin. And CRS has established variations of the cereal bank model in Madagascar and Haiti. CRS has also tried some types of cereal or seed banks in Liberia and Guatemala. Recently CRS/Burkina Faso and CRS/Kenya have been considering funding new cereal bank activities.

Examples of CRS Cereal Bank Projects -- Samba Fall and Paul Macek

The workshop organizers asked each participating CRS country program to bring to the workshop a one-page description of any cereal bank projects receiving support. These descriptions were distributed to other participants to facilitate exchanges of experiences. On the first day of the workshop, Samba Fall presented an overview of the experience of CRS/Senegal (500 warehouses created, 80 of which were granted an initial stock of grain) and Paul Macek described the experience of CRS/Benin (three cereal banks created, each granted an initial stock of grain). Details are available in the papers they distributed.

Objectives of Cereal Banks -- Participants and Lawrence Kent

Participants helped define the objectives, which were subsequently grouped into four categories to facilitate their consideration during the workshop. These objectives are:

- a. To provide better marketing services for farmers and consumers at the village level, including:
 - more favorable prices for farmers who sell and consumers who buy grain;
 - improved availability of grain in villages;
 - improved terms for borrowing grain during the hungry season;
 - reduction in over-selling (farmers selling too much);
- b. To reduce post-harvest losses;
- c. To strengthen village-level organizational capacity;
- d. To create village-level emergency food stocks.

Can Cereal Banks Provide Better Marketing Services? How do Traditional Marketing Services Operate? -- Lawrence Kent

Most of the objectives of cereal banks relate to providing better marketing services for farmers and consumers at the village level. How do CBs perform in this regard? To evaluate this question it is important to look at **existing trading services**: how do they work and why can we expect CBs to offer a better alternative? So now we're going to take a step back and examine the existing marketing systems. We'll also develop two tools for conducting market analyses.

How do existing trading service operate? To answer this question it is useful to look at the two dimensions of grain trading: **spatial and temporal arbitrage**. In every country the grain trading system serves two principal functions - distributing grain around the country to the places where it is most needed, and storing grain so that it can be distributed over time, that is, made available at the times when it is most needed.

The first function is called "spatial arbitrage" by economists because it involves moving grain over space - transporting it between different locations, such as between surplus and deficit areas, or between rural and urban centers. The word arbitrage is used because the process of moving grain over space is usually motivated by differences in prices - traders try to move grain from where it is low-priced to where it is high-priced to make a profit. They do this for their own profit motives, but the result is that grain is moved from areas where it is relatively abundant to areas where it is relatively scarce.

The second function is called “temporal arbitrage” by economists because it involves moving grain over time - putting grain in storage now to sell it at a later time. This is particularly important in countries such as Senegal that have only one grain harvest per year. Someone has to store the grain harvested in September so that it will be available to eat six months later. The word arbitrage is used because the process of storage is often motivated by differences in prices - traders try to move grain from low priced periods to high priced periods to make a profit. Sometimes temporal arbitrage is called speculative storage. People get involved in speculative storage for their own profit motives, but the result is that an important service is rendered - grain becomes available throughout the year and not just immediately after harvest.

Spatial Arbitrage (Trading between Geographic Locations)

Let’s first look at spatial arbitrage, because in some ways it’s the easier dimension to analyze - how does spatial trading work and how do we know if it’s working well or poorly? How can we judge whether or not we should be helping farmer groups to get involved in this type of trading, i.e., moving grain around the country?

Take a look at this map of Burkina Faso (see Annex C). The number you see in each geographic area is the price of a sack of millet in that area in December 1996. (Prices are in CFA Francs - currently valued at approximately 600 per US\$1.) What do these numbers tell us about the relative availability of millet in each of these areas? (Participants explain that the lower-price areas are grain surplus regions and the higher-price areas are grain deficit).

What do they tell us about the probable flows of millet around the country? (Participants draw arrows from low price areas to higher price areas to predict grain flows). These predicted flows correspond to the actual flows of millet around Burkina recorded in studies. The flows of grain are motivated by price differences (see Annex D).

Consider a pair of markets with different prices. Take for example Djibasso (71 FCFA/kg) and Ouahigouya (101 FCFA/kg). The price of a sack of millet (100 Kg.) in Ouahigouya is 3,000 FCFA higher than the price in Djibasso. Is this a problem? Is it an indication that the trading system is functioning poorly? Is it a sign that the farmers of Djibasso are being exploited? Is it evidence that the consumers of Ouahigouya are being exploited? On what criteria should we make such judgments? How would we go about assessing this situation?

There are two useful tools that can be used to make this assessment:

- **The first is an analysis of margins - are they fatter than they need to be?**
- **The second is an analysis of the structure of competition - is there effective competition?**

To perform an **analysis of margins** we should create a trading budget or in French a *compte d’exploitation*. This is a tool to check the size of traders’ margins and to try to answer the question: “is the gap between the traders’ purchase price and their sales price justified by the expenses they face? Or are they earning excessive profits at the expense of farmers or consumers?”

To create a trading budget we have to obtain the purchase price of the grain at the source market, say a 100 kilogram sack, and the sales price of the grain at the destination market. Say, in the case of trade between Djibasso and Ouahigouya, the price in Djibasso is 7,100 FCFA and the price in Ouagouiya is 10,100 FCFA. The difference gives us what is called the **gross margin**.

The next step is to list and add up all of the costs of trading on a per sack basis. These **marketing costs** may include:

- transportation
- loading
- unloading
- empty sacks
- collection commissions
- labor costs (including food and lodging)
- road/exit taxes (sometimes bribes)
- license
- temporary storage costs
- cost of capital (interest or opportunity cost)
- others costs

Once these costs have been estimated, we can add them up to get the total marketing costs. **We can then subtract them from the gross margin to get the net margin.**

The net margin can be considered the traders' reward for investing his/her time and taking the risk of grain trading. If, after making these calculations, we find that the net margin is quite large (a judgment call), we may take it as an indication that the trader is making excessive profits and that some type of intervention may be called for. But be sure to repeat the calculations on a number of trips, to establish the average net return, as the net return may vary greatly from one trip to the next. If, on the other hand, we find that the average net margin is quite small, we may take it as an indication that the trader is carrying out his function efficiently, given his/her marketing costs.

Suppose after we have done these calculations, we find that the net margin is enormous. We must then ask ourselves - is this situation sustainable? Why aren't competitive forces driving these profits down to normal levels? This leads us to the second tool of market analysis - **analysis of the competitive structure of a market.**

Suppose that in a given month the price in Djibasso is 40 and the price in Ouagouiya is 150 FCFA and a trader is making big profits moving grain between the two - what response can we expect from the trading system? We'd expect other traders, maybe even farmers and part-time traders or cement traders, to jump in and try to grab some of these profits. If this were to happen, we'd expect there to be a lot more grain delivered to Ouagouiya, which would begin to flood that market and drive down prices. Likewise, a lot more people would be trying to buy grain in Djibasso, and they would wind up bidding up the price there. Quite quickly we'd expect margins to be compressed until a new equilibrium was established. Soon the price difference between the two sites would be much closer to the actual marketing costs. At this point we would say the markets are properly integrated.

This situation is common in grain markets in Africa because it generally is quite easy for traders to jump into markets and start competing. This is the reason net margins are usually quite thin. Large profits can only be sustained if something keeps other traders from jumping in - if one trader has a monopoly or a small group of traders form a cartel to keep other traders out. Analysis of the competitive structure of a market can help determine if a trading route is subject to competition or controlled by a monopoly. This analysis consists of addressing three groups of questions:

- **Is there only one trader involved in this commerce, or many? Can buyers and sellers choose whom they transact with?**
- **Is there a small group that makes and respects price fixing agreements? Can they effectively stop cheating within their small group?**
- **Are there effective barriers to entry that keep others totally shut out when profits are attractive?**

Our experience is that these conditions rarely apply to trade in cereals or grains. Most rural markets are visited by many buyers and sellers. Most villagers have a choice. It's easy and cheap to get into the grain trade (part-time traders, itinerant traders, renting space on trucks). This is why the market is competitive and net margins are usually quite thin. When profits are large, it is usually only temporary, and when there are losses they are also usually temporary.

These conclusions are supported by extensive studies conducted by researchers. Here in Senegal, for example, GTZ commissioned a long study of the country's grain markets and concluded:

- Private traders allocate grain competitively and efficiently in Senegal, mostly as a result of the country's good road network;
- Commercial margins between rural producer prices and urban consumer prices are stable and homogenous, reflecting mainly transport costs;
- Intense competition between traders rules out excessive profits.

Now how is this relevant to cereals banks? It's relevant insofar as cereals banks and village groups are encouraged to get involved in moving grain around a country. Spatial arbitrage is a highly competitive business and margins are thin - only economic agents with good management are likely to succeed, or survive.

At this point, two case studies were distributed to provide the participants with an opportunity to use the two tools for assessment of a market's performance: analysis of margins and analysis of the structure of competition (see Annex E, F). The participants worked in small groups to make estimates of trading costs to facilitate the creation of a trading budget and the calculation of net margins. They also discussed their analyses of the structure of competition based on available information. Key points that emerged from these case studies included:

- In the case of trade between Bokoro and N'Djamena, net margins are quite small after accounting for all marketing costs. In some cases, they are even negative (representing a loss);
- The fact that there are only three trucks in Bokoro, doesn't mean there are only three traders - many small traders may rent space on these trucks. Competition may therefore be greater than first assumed;
- In the case of Bir Tawil, the difference between the price of grain in Cheddra and the price in Bir Tawil is significantly greater than the transportation costs. However, if one were to bring a full truckload of grain into Bir Tawil, the market would probably become saturated, driving the price downward in Bir Tawil, resulting in losses for the trader;
- The fact that there is little market activity in Bir Tawil, does not indicate that there is a monopoly. More likely it reflects the difficulty of trading profitably in this remote village, where inhabitants prefer to purchase grain in Cheddra when they go there on market day and carry it to their homes on donkeys.

Temporal Arbitrage (Speculative Storage)

Now let's look at the other dimension of grain trading - temporal arbitrage, or speculative storage. Just as traders try to move grain from low-priced areas to high-priced areas, they also try to move grain from low-priced time periods to high-priced time periods.

That is, they try to buy right after the harvest in October-December when prices are low, store the grain and sell in June-August when prices are highest.

How does such speculative storage work and how do we know if its working well or poorly? How can we judge whether or not we should be helping farmer groups to get involved in this type of trading, i.e., buying grain, storing it and selling it in a later period?

To judge the effectiveness of speculative storage we can use the same two tools we used to analyze trade between geographic locations:

- **The first is an analysis of margins - are they fatter than they need to be?**
- **The second is an analysis of the structure of competition - is there effective competition?**

The analysis of margins in speculative storage is conducted in the same way we did it earlier for trade over space. We calculate the difference between the purchase price and the sales price to determine the **initial gross margin**.

Let's look at an example: the rural Burkina Faso market of Djibo. Let's say the trader buys at the average post-harvest price of 97 FCFA/kg, stores the grain for eight months and sells it at the average lean season price of 161 FCFA/kg. (This is probably more realistic than to assume he/she times everything perfectly and buys at the annual low and sells at the annual high.) The difference between the two average prices is the initial gross margin, in this case about 64 FCFA.

This initial gross margin should be adjusted slightly downward to **account for physical storage losses**. Say 5% of the grain stored for eight months is lost. The trader can only sell 95% of the grain he originally purchased. Therefore the trader's revenue is not 161 FCFA per kilogram; instead it is 95% times 161 per kilogram, or 153 FCFA.

The **final gross margin** is the difference between the purchase price of 98 FCFA and the revenue of 153 FCFA per kilogram. This is 56 FCFA per kilogram. The next step is to calculate the costs of engaging in this trade. These **marketing costs** (listed by participants) might include:

- transportation from market to warehouse
- handling
- warehouse rental or depreciation
- empty sacks
- insecticides
- pallets (rental or depreciation)
- guard costs
- license
- cost of capital (interest or opportunity cost)
- other costs.

Once these costs have been estimated, we can add them up to get the total marketing cost. We can then **subtract this total marketing cost from the final gross margin to get the net margin**. The net margin represents the return this trader can expect for the time and risk he or she has invested in speculative storage.

At this point, a case study was distributed to the participants to provide an opportunity for practice in calculating traders' net margins for investments in speculative storage. Work was conducted in small groups. The case study involved analysis of five years of real price data for millet for the rural Burkina Faso market of Djibo - beginning with the 1995-1996 marketing year (see Annex G, H). For each year, participants compared the average post-harvest price with the average hungry season price to calculate gross margins. They then estimated marketing costs and subtracted the total marketing costs from the final gross margin to get the net margins. Key findings included:

- Gross margins vary greatly from year to year. Average prices went up 65% in the 1995-1996 season, but only between 18% and 32% the other years;
- Total trading costs are substantial, especially if we take into account reasonable estimates of the cost of capital and warehousing costs;
- Subtracting the total trading costs from the gross margin yields a positive net return in 1995-1996 (large profit), but negative net returns in each of the other four years (losses);
- A cereal bank that sells at below market prices (as some try to do) is more likely to generate negative net returns, even in years like 1995-1996 when prices rise substantially;

- Investment in speculative storage is a risky and usually unprofitable business. This helps to explain why traders generally avoid it, and why cereal banks usually lose money.

After the analysis of margins, there is a second tool to evaluate the efficiency of temporal arbitrage - **an analysis of the competitive structure of the business of speculative storage**. To conduct this analysis we must address the same group of three question presented earlier when discussing spatial arbitrage:

- **Is there only one trader involved in this commerce, or many? Can buyers and sellers choose whom they transact with?**
- **Is there a small group that makes and respects price fixing agreements? Can they effectively stop cheating within their small group?**
- **Are there effective barriers to entry that keep others totally shut out when profits are attractive?**

These following points were presented by Elliot Berg: Our experience in the Sahel indicates that there is no monopoly in grain storage, because it is an activity in which millions of Sahelian farmers are largely involved and there are no barriers for any trader with a small amount of capital to become involved. If unusually high profits could be earned with normal risk by buying and holding grain, many people could expand their participation. Farmers could do so by selling a goat and investing in a few sacks of grain; government officials, transporters, and urban businessmen could easily mobilize the small capital requirements and also benefit from buying and holding grain. This activity would eventually drive down profits through competition. An analysis of the structure of competition suggests that speculative storage is not an easy way to earn monopoly profits in the Sahel; rather, it is a highly competitive business with many players.

Two Additional Grain Marketing Issues: Forced Sales and Trader Usury -- Lawrence Kent

While we are on the topic of the performance of existing marketing systems for grains, it may be useful to address two additional grain marketing issues. These issues are often cited as justifications for cereal banks so it is important to evaluate their validity.

Forced Sales

The first issue is **forced sales**, which is best understood through these quotes from proposals for cereal bank projects:

- "...farmers almost invariably sell most of their produce (generally millet and sorghum) just after the harvest time (October, November) to meet financial obligations (taxes, debts, ceremonies, etc.) with the knowledge that they would be repurchasing the same grain at exorbitant prices, usually 150 to 250% above the sales price, before or during the hungry season..." Suha Satana on Burkina Faso 1981;

- "...farmers are often compelled by immediate and pressing domestic financial needs to sell most of their meager harvest at very low prices during the harvesting period in order to meet these needs. Invariably, they are then compelled to buy these at very high prices during the hungry season." CRS/Ghana 1994;
- "Most of the production is sold at relatively low price at harvest time in order to meet financial needs." CRS/Senegal 1994;
- "...farmers prefer to sell the majority of their crops immediately following the harvests in November and December..." CRS/Benin 1997 (proposal).

Forced sales are therefore a major rationale for the creation of cereal banks. However, when detailed field research has been conducted on the issue of forced sales, the results have been surprising:

- Stephan Goetz conducted detailed surveys on sales and purchases of grain in rural Senegal, interviewing in-depth and repeatedly 150 households. Of the 150 households surveyed, only 15 both bought and sold coarse grains. Of these, six were purchasing at low prices after harvest and selling at higher prices in the *soudure* (hungry season). Only five households were actually following the traditional "forced sales" pattern. (Goetz, 1990);
- A team from the University of Michigan spent two years surveying 220 grain farmers in rural Burkina Faso. They found that "sales patterns are more evenly distributed than is typically thought. The largest grain sales do not occur immediately post-harvest, but rather in the following quarter. No quarter has less than 17% of sales and none more than 33%." (see Annex I) They also found that 88% of farmers do not sell grain in low price periods then buy it back in high priced periods. (Shaman et. al. 1987) These results are described in detail in the French readings packet;
- From 1991 to 1994 USAID financed detailed research on farmers grain sales in Chad. A total of 311 farmers were surveyed in detail in 14 different villages. During the survey period, 28% of total farmer sales of cereals (by volume) occurred during the three months right after the harvest (October-December). Twenty-nine percent of total farmer sales of cereals occurred during the next quarter (January-March). A surprising 39% of total farmer sales occurred during the third quarter (April-May) and only 4% occurred during the hungry season (June-August). (see Annex J) The percentage of farmers selling grain during the first nine months after harvest is also fairly equal. (see Annex K) This evidence contradicts the commonly held belief that farmers are forced to sell most of their grain right after harvest. (Herman et. al. 1994) These results are described in detail in the English readings packet.

Detailed empirical evidence, therefore, suggests that the rationale of "forced sales" is questionable. Farmers tend to spread their sales of cereals throughout the year.

The Issue of Trader Usury

Many CB promoters believe that traders exploit villagers by charging unfairly high interest rates (usury) when they provide cereals on credit and demand in-kind repayment after harvest. It is said that when a villager borrows a sack of millet from a merchant in the

hungry season, he or she must pay back two or three sacks after harvest, giving the merchant a huge profit. This is said to lead to a vicious cycle of dependency. According to one cereal bank promoter, CBs serve for “the liberation of peasants from the claws of usurers”.

Evidence concerning this “exploitation-through-credit” hypothesis is sparse. There are some *a priori* grounds to be skeptical. As mentioned earlier, excessive profits to an activity are only possible on a sustainable basis if there are significant barriers to entry to the activity and hence monopoly power. This situation does not apply to the lending of grain, because entry is easy. Anyone who purchases or harvests extra grain is free to lend it out. If it were really possible to make a 200% profit by lending out cereals, many people would shift capital from other investments (livestock for example) and get involved in grain lending activities. This would eventually drive down the interest rate and profit margin.

Why don't more people jump in? One of the reasons is that lending out grain is not nearly as profitable as some assume. Defaults are high. Research in Burkina Faso on traders' loans of grains demonstrated that half of the farmers who borrowed grain did not pay anything back. The high interest charged was partly to compensate for these default costs.

As many Cereal Bank programs have learned the hard way, when one lends out grain with interest (even moderate interest) one is likely to suffer defaults and lose money. How widespread is the problem of traders trapping farmers into debt and dependency? There is not much empirical evidence; what we have seen is summarized below:

- Of 460 farmers interviewed by Ouedraogo in Burkina Faso in 1980, only eight percent had purchased grain on credit at anytime in the previous two years. The average amount paid back was less than one sack. More grain was given away as gifts than used to pay back loans;
- In Chad, of 311 households surveyed in 14 villages, only 2.5% stated that they sold cereals to repay debts in 1991/92. Only two percent in 1992/93. (Herman et. al. 1994) These results are described in detail in the English readings packet.

These two studies suggest that the problem may not be as widespread as assumed in the Sahel; however, the question remains open, and further research is needed.

Day 2: The Performance and Experience of Cereal Banks

After a quick review of the topics of Day One, particularly the two tools of market analysis (calculation of margins and analysis of the structure of competition), we dedicated Day Two to a closer look at cereal banks.

Examples of CRS Cereal Bank Projects -- Christopher Bakaweri and Mulbah Jackollie

On the second day of the workshop, Christopher Bakaweri presented an overview of CRS/Ghana's experience in three projects with grain banking components. He made his overview and analysis available through a six-page paper which was distributed to all

participants. For CRS/Liberia, Mulbah Jackollie presented an overview of their experience with seed banks that operate on an in-kind basis. Details are available in the paper he distributed to participants.

Do cereal banks succeed in providing better grain marketing services? Are they sustainable? -- Lawrence Kent

Given the discussions of the first day of the workshop, it appears that the cereals trade in the Sahel is competitive. Margins are thin in both spatial and temporal arbitrage. There are no large pools of excess profit waiting to be scooped up by any newly-created trading entity like a cereal bank. The environment is competitive for all economic actors.

How have cereal banks fared in this competitive environment? Have they succeeded in providing better grain marketing services than commercial traders? Have they proven sustainable?

These three questions are linked. In many cases, cereal banks have provided better marketing services to their customers by lending or selling them grain at below-market rates. On average, CBs sell their grain at a 10% discount. **However, by selling or lending grain at below-market rates, these cereal banks have tended to lose money, decapitalize themselves, and eventually go out of business.**

This really should not come as a surprise. In a competitive environment, net margins are generally thin. Anyone who sells goods at below-market prices is likely to generate losses.

This graph of the evolution of cereal banks supported by FONADES provides an example of how losses mount over time and eventually bankrupt cereal banks. (see Annex L) FONADES is an NGO that has been the first and foremost promoter of CBs in Burkina Faso. Based on data from 27 CBs, the graph shows how CBs that were granted 30 tons of cereals as a revolving fund saw the value of that fund decline to an average of 23 tons at the end of their first year of operations, to 12 tons by the end of the second year, to four tons by the end of the fourth year, and to less than one ton by the end of the sixth year.

Not all CBs have lost their revolving funds as systematically as the FONADES CBs, but most have. CBs have generally lost money in each dimension of their grain trading.

In terms of **spatial arbitrage**, a few CBs have succeeded in moving grain around without losing money, but most have not. We have already seen that net margins are generally thin in this business. It is difficult for CBs to cover their costs when they move grain from one area to another, unless their transportation is subsidized, which NGOs sometimes do, or the CBs are very efficient, which is very rare. Recently, I gave a copy of "The Economics of Cereal Banks" to a man working for Afrique Verte - an NGO specializing in helping CBs with spatial arbitrage - and he said, "You're right, most of the groups we're supporting will lose money as soon as we stop supporting them".

In terms of **temporal arbitrage**, there are some CBs that succeed, but again they are rare. Most CBs lose money when they buy, store and sell grains. This is not surprising given the exercise we completed yesterday on returns to storage in Djibo, Burkina Faso. An investor in speculative storage in Djibo would have lost money four of the five years for

which we have price data. Even when CBs' warehousing and capital costs are subsidized by outsiders, they still tend to lose money through their investments in temporal arbitrage.

In terms of **lending grain**, the record of CBs is generally disastrous. CBs that attempted to lend grain on terms more favorable than those offered by private traders quickly learned that lending grain is a difficult business. Defaults are common. Villagers who borrow grain from a CB frequently feel little moral obligation to pay back their loans because they perceive the CB as a "social" institution. Evaluation after evaluation cite defaults on grain loans as a major cause of the bankruptcy of cereal banks.

When cereal banks are newly created and are receiving close monitoring support or subsidies from an outside agency, they encounter many problems but generally continue their operations. However, after outside monitoring and subsidies end, most CBs decapitalize and cease operations. The best data we have on the sustainability of cereal banks comes from the two countries that have promoted CBs the most: Burkina Faso and Niger.

In **Burkina Faso**, when we did our study in 1991, 1,500 CBs had been created. Of these, 900 were effectively out of business, and 600, mainly newly-created ones, were still operational. Since 1991, another 300 CBs have been created in Burkina Faso bringing the total created to 1,800. According to ACOPAM, a very pro-cereal bank agency, there are currently 600 CBs that are operational, meaning that at least 1,200 are bankrupt. Assuming that 300 of the 600 that are still operational are ones that were created since 1991, it's fair to guess that only 300 of the 1,500 CBs created before 1991 are still operational. This means that at least **1,200 of the 1,500 created before 1991 in Burkina are bankrupt -80%.**

I attended a meeting two weeks ago in Burkina Faso called by the EU. The EU had decided to furnish food aid to existing CBs and they called together a group of NGOs to ask how many they had established and were any functioning in which they could inject food aid. The response of an Austrian NGO was typical - "we established 14 CBs five years ago, the warehouses are still there, but all of the committees have lost their revolving funds and are bankrupt." Others present said things like "we established six CBs a few years ago, we don't follow them closely now, maybe one is still working".

In **Niger** we have less data. In 1991 we interviewed a consultant who had just returned from two months traveling around the country doing an inventory of cereal banks. He didn't have precise figures but said that he'd seen scores of bankrupt cereal banks, and "not one that survived more than three years after the end of outside support." Two months ago I interviewed the top advisor working in Niger's Famine Early Warning System and asked him how cereal banks were doing in Niger - he estimated that **90% were effectively bankrupt.**

Recently, I visited one of the largest promoters of cereal banks in Niger - the Dutch organization known as SNV. They told me their cereal banks had many problems but were generally doing well - after four years of intensive training and support 41 of the 88 CBs they worked with were covering their costs and could be considered sustainable. (47 weren't). I asked them to lend me a report on the program, and in it I found an interesting story - the FAO had created 100 cereal banks in the area in earlier years and requested SNV to check out and perhaps rehabilitate some of these older CBs that were considered

salvageable. SNV did a review of the paperwork on 100 of these CBs and found only 10 that still had some of their original revolving fund left. They decided to visit these 10 and look more closely at their situation. During the visit they realized that nine of them had effectively no revolving fund - only one of the original 100 was considered salvageable. And the report said the reason that one was still working was because it was receiving ongoing support from a German project in the area.

The problem of the **unsustainability** of cereal banks has been gaining wider recognition in the 1990s. In 1991, three leading CB promoters held a workshop in Ouagadougou to discuss the myriad causes for the frequent failure of CBs. In 1993 the German aid agency GTZ published a document called "Cereal Banks: Are they all Bankrupt?" and held a conference in Mali to discuss the issue. After observing the unsustainability of its CBs in Niger, the Germans have switched their funding from the creation of CBs to the development of credit unions. In 1996, CRS/Niger wrote in its progress report: "One of the problems with cereal banks in Niger is that as long as there is on-going monitoring by the sponsors, things work well. But once project funding ends and the banks are left on their own, many of them cease to exist after about three years." A former supervisor of CRS cereal banks in Ghana has termed CBs as effective "slow release mechanisms for food aid" but not sustainable institutions.

The **reasons for the failure** of most CBs can be summarized in seven points:

1. Insufficient understanding that net margins are thin - there's little room for error in trading;
2. CBs frequently make management errors - inexperience, slow collective decision-making and social pressures lead to poor decisions in terms of timing and pricing of purchases and sales;
3. The managers of CBs are managing collective goods and not their own private affairs; hence, there are low incentives for cost minimization or efficient management;
4. Speculative storage is less profitable and more risky than most people assumed;
5. Grain that is loaned out by CBs is frequently not paid back;
6. CBs often suffer from corruption and other abuses of the cash box (e.g., insider loans);
7. Support agents can become predators, stealing the money of the CBs they are supposed to be helping.

CBs that succeed sustainably are rare. **Successful CBs** are usually characterized by the following:

1. Selfless, dynamic leaders;
2. Careful selection of villages and lots of training for the leaders before operations begin;
3. Business-like approach:
 - no grain loans, avoidance of social charity;
 - charge market or close-to-market prices;
4. Not located in the poorest, chronically deficit areas, because of low purchasing power and social pressures to extend credit;
5. Not located in surplus areas, where it is difficult to find buyers of cereals.

Ironically, but not surprisingly, the CBs that tend to survive are those that help their members the least - they don't buy at above-market prices, they don't sell at below-market prices, they don't loan to people in need, and they aren't located in the poorest areas. These are the CBs that act the most like private traders. Promoters of these types of CBs have to be ready to answer difficult questions such as:

- Why are you acting like traders?
- Aren't you supposed to be better, fairer, and more charitable?
- After all of your efforts, what do you offer that private traders don't already?

How do CBs do in regards to physical storage? -- Sol Owens and Lawrence Kent

Sol Owens of CRS/Gambia presented a paper on post-harvest losses. His paper was made available to interested participants. One of the key points presented was that there is a difference between post-harvest losses and storage losses. Post-harvest losses include all losses in harvesting, threshing, transportation and storage. Storage losses are only one part, often a minor part, of post-harvest losses, particularly in the Sahel where conditions are dry. Lawrence Kent pointed out that in Ghana, one of the stated goals of CRS's cereal bank program was to reduce storage losses estimated at 30%. However, during the base-line survey it was discovered that storage losses were really only three percent.

Extensive research by CILSS (a regional institute for the Sahel) has revealed that storage losses are three to five percent in traditional structures in the Sahel, but significantly higher in government silos and warehouses. It is unclear if cereal banks in the Sahel actually decrease physical storage losses.

CRS cereal bank projects have proposed to "teach farmers to avoid losses through modern techniques". But in Niger, a CRS cereal bank project started with an initial stock of 3,135 sacks of millet. Over 1,500 of those sacks either rotted or became spoiled and had to be given away while they sat in the cereal bank project's regional warehouse waiting to be distributed to the village level warehouses. Compare this 49% loss with farmer storage loss rates estimated at between three and five percent, as estimated by CILSS.

Eberhard Reusse of the FAO pointed out that after 15 years of extensive project implementation in the FAO's Post-harvest Food Loss Prevention Program, "based on the paradigmatic assumption of excessive losses in small-farmer post-harvest, particularly storage, systems, it has now become generally accepted that these losses are moderate due to generally efficient local resource management systems under prevailing environmental conditions and that further reduction via innovative means is hard to achieve in a cost-effective manner."

How Do CBs Perform In Building Community Organizations? -- Elliot Berg

Dr. Berg began his presentation by noting that supporters of CBs often claim that cereal banks help build community organizations by:

- providing an activity around which to organize;
- generating profits for other community activities;
- serving as a focal point for training.

He noted that it is true that cereal banks provide an activity around which to organize. Village cooperatives often have nothing to do, and cereal banks offer an activity. He questioned, however, whether grain trading is appropriate as a collective activity. Grain trading requires the kind of dedication and quick decision-making that characterize private, individual traders. Collective management committees have trouble making the quick, hard decisions that grain trading requires. They are subject to pressures to make decisions on “social” grounds rather than on business principles. They therefore encounter numerous problems that often lead CBs to bankruptcy. He also noted that cereal banks rarely make profits and therefore have trouble financing other community activities in a sustainable way. Instead, they decapitalize themselves to make social loans or to promote other community services.

On the third point, Dr. Berg discussed the problem with using CBs as a focal point for training. He noted that one problem is the high turn-over of managers of CBs. Once an NGO has invested in training a manager, the person often leaves his position to go work elsewhere, particularly if the CB position was an unpaid one.

Dr. Berg questioned whether the problems of CBs can be resolved through more training. He suggested that the management problems that CBs face are inherent in the collective management structure. More training can help improve operations in the short run but it probably does not represent a solution to the unsustainability of CBs.

Dr. Berg recognized that there are important social roles for collective structures in villages, such as giving a political voice to rural people and managing true collective goods such as roads and wells, but he questioned whether cereal banks were appropriate institutions to achieve these goals. Perhaps another type of village institution is required? Perhaps a Social Fund?

How Do CBs Do In Regards To Serving As Emergency Grain Stocks? -- Dr. Elliot Berg

Some supporters of cereal banks have suggested that CBs can act as decentralized warehouses for national security stocks, where grain is stored for several years, and distributed free to the needy when a national food emergency arises. Dr. Berg suggested that such a role for CBs is probably unworkable. Sahelian governments do not have the management or supervisory capacity to coordinate or oversee such decentralized operations.

Others have suggested that CBs carry out their normal operations in normal years, but be encouraged to give away their stock to the needy during food emergency years. Dr. Berg pointed out that this outcome is already common in cereal banks operations - in bad

years, CBs tend to lend their grain out to people who default on those loans. This addresses a short-term need, but effectively bankrupts the CBs, unless a donor agrees to replenish them afterwards with fresh injections of food or money. A serious problem with this approach is that it provides an incentive for cereal banks to give away their stocks often, as they know there is the possibility for a fresh gift of food or money. And questions arise in terms of targeting to the poorest, deciding when there is an emergency, and creating dependency rather than sustainable institutions.

The Experience of ACOPAM with Cereal Banks in the Sahelian Sub-Region -- Mourtalla Diop

Mr. Diop explained the origins of ACOPAM as a project implemented by the International Labor Organization with financial support from the government of Norway. ACOPAM is the leading agency involved in promoting cereal banks in the Sahel. It has been active for 20 years. In recent years ACOPAM has helped CBs to organize into unions and helped Sahelian governments develop National Cereal Bank Strategies. Mr. Diop distributed a paper to all participants to share information about ACOPAM's cereal bank programs.

The Views of a Representative of the FAO's Food Security Unit -- Eberhard Reusse

Mr. Reusse discussed the problems of donor-driven development projects and contrasted them with genuine grassroots initiatives in Africa and elsewhere. He suggested that many project approaches promoted by donor agencies are based on an inadequate understanding of local problems and local people's own systems of coping and surviving. For Mr. Reusse, cereal banks are a good example of a donor-conceived intervention that is ill-adapted to the realities of Sahelian grain markets - they are artificial institutions that in most cases only exist because of outside subsidies. Mr. Reusse is currently working on a policy paper for the FAO on the topic of cereal banks - a paper that is likely to be critical of the cereal bank approach. He said he will do his best to send the paper to the participants once it is completed.

A Modified Approach: Inventory Credit or Using Grain as Collateral in Ghana -- Dr. George Kwadzo

Dr. Kwadzo of Technoserve described his NGO's project for Inventory Credit in Ghana. Under this program, maize farmers put their grain up as collateral to secure loans through their local cooperatives shortly after harvest. The amount of the loans is 75-80% of the value of the collateral they deposit. Later in the year, the farmers have the choice of repaying their loans with interest and recovering their collateral, or having their cooperative sell their collateral, deduct the outstanding amount of the loans, and refund any remainder to the farmers.

Dr. Kwadzo emphasized that the Technoserve approach to inventory credit is business-like and not social. Technoserve does not grant the cooperatives a revolving fund. Instead, it facilitates relations between the cooperatives and commercial banks. The

banks lend operating funds to the cooperatives at commercial interest rates. The cooperatives then make collateralized loans to their members at slightly higher rates.

Because seasonal price rises for maize are higher in central Ghana than in the Sahel countries, Technoserve's inventory credit project has succeeded in substantially helping participating farmers. By delaying sales until the high-price time of the year, farmers have been able to increase their revenues and enhance their farm incomes.

The Inventory Credit approach is best suited to areas where farmers produce a marketable surplus that can be used as collateral. It is also best suited for areas where there is substantial capacity for the necessary bookkeeping (literacy required). The approach also requires an implementing staff that is qualified and dedicated to a business-like approach to cooperative development.

Dr. Kwadzo distributed materials on the Technoserve project to all of the participants.

Day 3: Field Trips

The participants broke into six groups of five to six people. Each group was assigned a vehicle to make site visits in the villages around Thies and Mekhé, about one to two hours north of Dakar. Each group was assigned a Terms of Reference that described the issues they were to explore as they made their visits. (see Annex M for an example) Each group visited two cereal banks (either operational or bankrupt) and a market where grain was traded. In the grain market, participants practiced using the two tools developed on Day One - analysis of margins and analysis of the structure of competition. Each of the six groups presented their basic conclusions to the large group in the evening.

Day 4: Exploring Alternatives and Seeking Conclusions

More Examples of CRS Grain Storage Projects -- Anselme Rakotomanana and José Angel Cruz

The final day of the workshop opened with a presentation by Anselme Rakotomanana on the grain storage projects of CRS/Madagascar. Two of these projects took an Inventory Credit approach - farmers deposited their rice as collateral to secure loans of up to 50% the value of their collateral. These projects faced many challenges and difficulties but generally yielded positive results. Anselme distributed a written summary to each of the participants.

Later in the day, José Angel Cruz presented the experience of CRS/El Salvador in promoting an improved metal silo for individual family storage of basic grains. He circulated a scale model of the improved silo and distributed detailed information on the program.

Ali Abdoulaye of CRS/Niger also circulated written materials on CRS-supported cereal banks in his country, and Philip Kajwang distributed information on a CRS project with a cereal banking component in Kenya.

The Question of “L’Organisation du Monde Rural” or “What’s our Vision for a Developed Rural Economy?” -- Dr. Elliot Berg

Dr. Berg began his talk by discussing the problem of institutional underdevelopment in Africa. Too many decisions affecting Africa are made by outsiders without genuine input from indigenous institutions. Structural adjustment programs are largely designed by outsiders, aid programs are designed by outsiders, and even small projects like cereal banks are designed, supervised and evaluated by outsiders. As a result, it is the outsiders that do the learning, not the locals, and very little local capacity-building or institution-building occurs. Institutions created by outsiders, like CBs, usually turn out to be unsustainable.

Next, Dr. Berg discussed the importance a dynamic class of intermediaries for the development of agriculture. He said he knows of no society in the world that has been able to develop its agriculture and rural economy without the development of a class of private service providers to supply inputs, purchase crops, and transform, store, and transport those crops. Cooperative approaches that try to cut out or avoid the middlemen, generally haven’t proved viable and can even be counterproductive. In those few cases where cooperatives have played a role in development, this role has usually been minor. The Soviet Union, for example, was able to make great strides in its industrial development but it always failed to develop its agriculture - its hostility to the emergence of private intermediaries meant that Soviet agriculture did not have the kind of quick response flexible services that private intermediaries provide and that farmers need.

African governments, unfortunately, have also been suspicious and unsupportive of private intermediaries. Many African governments established official marketing offices for cereals in the 1970s that attempted to replace private intermediaries. These offices generally failed due to poor management, corruption and an inability to provide the kind of timely marketing services that were required by farmers and consumers. The roles of these cereal offices were greatly reduced in the 1990s. Most analysts recognized that these offices hurt the development of agriculture by retarding the development of a dynamic class of intermediaries.

The movement to create and support cereal banks can be analyzed in this same context. It has been a movement that has tried to replace the middleman with a new institution, the CB, which is inherently unsustainable. This is a mistaken approach. It retards the development of a sustainable institution - the private middleman - which is essential for agricultural development. NGOs should probably spend less time trying to replace the middleman and more time improving the environment for economic activity (though infrastructure development and development of credit services) or building human capital through education and training programs.

The CRS experience with Village Banking: Is this an Alternative? -- Patrick McAllister

Patrick, with the help of Jindra Cekan, discussed the linkages between village banking and food security. Through village banking, villagers can increase their income and thereby improve their access to food through purchases. The CRS approach to village banking focuses on women. This is positive in terms of food security - women are considered more likely than men to spend extra income on food for their families.

Patrick discussed the CRS experience with village banking projects and the importance of rural finance in development. He expressed interest in the Inventory Credit approach that was presented earlier by Technoserve, but emphasized that the CRS village banking approach is focused on the poorest of the poor and mainly on women. He provided written materials on the principles of village banking to all of the participants.

Other Alternatives in the Search for Food Security -- Lawrence Kent

When looking at alternatives to cereal banks, it is useful to divide our analysis into two contexts: development and post-emergency.

In the **development** context, cereal banks are flawed because they are essentially unsustainable. It is necessary to look at more promising alternatives to achieve long-term food security. Two alternatives have already been discussed:

- Inventory Credit - this modified approach shows some promise, but is best suited to environments where farmers have adequate production and a business-like approach is possible;
- Village Banking - this approach to food security emphasizes the development of women's incomes, thereby allowing them to purchase more food.

Other project approaches to food security include:

- Promoting agricultural development, through training or the transfer of technologies such as improved seeds or soil conservation techniques;
- Promoting off-season gardening as a means to grow food and also generate revenues to purchase foods;
- Promoting other income-generating activities, such as handicrafts or raising of small ruminants;
- Development of community infrastructure, such as wells (to improve health and food utilization) and roads (to improve market access).

None of these approaches is easy, but they probably have a greater chance at achieving sustainable impact than do cereal banks.

In the **post-emergency** context, cereal banks can play a temporary role, because they can supply food on favorable terms, but on an unsustainable basis. We must ask

ourselves, however, if all of the investment in setting up a cereal bank (warehouse construction, training, bookkeeping, meetings, etc.) are justified if we recognize that the institution is unlikely to function for more than two or three years. The major alternative to cereal banks in post-emergency situations is Food-for-Work (FFW) or Cash-for-Work. If managed well, FFW can meet short-term needs for food support, target assistance to the poorest, and develop useful infrastructure such as roads or soil conservation measures (rock bunds, etc.). This infrastructure, if well designed, can be part of a longer term strategy to increase economic and agricultural development.

Conclusions -- Kevin Tobin

After further discussions, it was decided that no formal policy conclusion would be decided at the workshop. Instead, Kevin Tobin suggested that it be left to each of the participants to take into account the lessons learned at the workshop when considering new cereal bank projects. In the future, CRS employees should not ignore the weaknesses in the analytical and empirical arguments for cereal banks. Nor should they ignore the poor track record of CBs in terms of sustainability. They should subject CB proposals to close scrutiny and consider alternative approaches to enhancing food security. For existing cereal bank programs, project managers should consider steps to improve their management or work with the communities to shift resources out of the cereal banks and into other community projects that they consider to be higher priorities or more likely to have sustainable impacts.

[The Standards and Guidelines for CRS Agricultural Programs are being updated in 1998 and an Agricultural Manual will be developed - both will include recommendations/policies relevant to cereal bank projects.]

{{ GROUP PHOTO }}

Page: Annex:

- 1 A. List of background readings in English and French provided to participants.
- 1 B. List of Participants, with addresses.
- 4 C. Map of Burkina Faso with Dec '96 millet prices by region.
- 4 D. Same map of Burkina Faso with arrows indicating grain flow between markets.
- 6 E. Case Study exercise for small group reflection and discussion.
- 6 F. Case Study #2 exercise for small group reflection and discussion.
- 8 G. Graph of Djibo millet prices - Oct '95 to Aug '96.

- 8 H. Case Study -- Returns to storage exercise: Djibo, Burkina Faso.
- 10 I. Distribution of Farmer Sales of Cereals by Period of the Year -- Burkina Faso.
- 10 J. Distribution of Farmer Sales of Cereals by Period of the Year -- Chad.
- 10 K. Percentage of Farmers Selling Cereals by Period of the Year -- Chad
- 12 L. FONADES CBs in Burkina Faso
- 18 M. Group #2 : Terms of Reference: Case Studies of CBs in S. Thies Region